

Appln. No. 10/576,322

Amdt. dated November 25, 2009

In reply to the Office Action of August 26, 2009

**AMENDMENTS TO THE DRAWINGS:**

The attached sheet of drawing includes changes to Figure 1. This sheet, which includes Figure 1, replaces the original sheet for Figure 1.

**REMARKS**

The Office Action of August 26, 2009 and the prior art relied upon thereon have been carefully studied. Favorable reconsideration and allowance of the claims are requested.

**I. Claim Status and Amendments**

Claims 1-4 presently appear in this application and stand rejected. No claims have been allowed.

By way of the present amendment, claim 1 has been amended to better clarify the various structural elements of the centrifugal pump. For instance, claim 1 now specifies "...the pump housing comprising a bottom wall (22) facing the lower cover disc and having a central inlet opening (24)," and "wherein a circular gap (30) separates a space (29) arranged between the lower cover disc (16) and the bottom wall (22) from said central inlet opening (24)..." . Support can be found throughout the original disclosure, for example, at page 4 line 27 to page 5, line 7, together with the original figures. Claim 1 has also been amended to recite "the portion of said back flow affecting means (32, 34) being adjacent the circular gap (30) is arranged below said circular gap (30)." Support can be found throughout the original disclosure and figures.

Other minor editorial revisions have been made to the claims to better conform to US claim form and practice. Such revisions are non-substantive and not intended to narrow

the scope of protection. Such revisions include: replacing the "characterized by" language with "wherein"; revising the beginning of the claims to recite "A" or "The"; and revising the claim language to provide proper antecedent basis throughout the claims. In keeping with US law, the use of "a" or "an" in patent parlance carries the meaning of "one or more".

No new matter has been added by the above claim amendments.

The specification has been amended at page 5, line 27 to recite the drawing reference numeral 34 as depicted in Figure 4. No new matter has been added.

A replacement drawing sheet for Figure 1 has been submitted to replace original drawing sheet for Figure 1. The new sheet includes a reference numeral for "space 29", as suggested by the examiner. No new matter has been added.

## **II. Priority Claim**

Applicant notes with appreciation that the examiner has acknowledged the priority claim and the receipt of Applicant's paper filed under § 119.

## **III. Objection to the Oath/Declaration**

On page 2 of the Office Action, the examiner objects to the oath/declaration on the basis that non-initialed and/or non-dated alterations have been written on it.

Accordingly, it seems the examiner objected to the improper manner of making corrections to the oath/declaration. The alterations were made to update the inventor's address. Applicant herein submits a Supplemental Application Data Sheet to correct the inventor's address, as permitted under US practice. See MPEP §§ 601.05 and 602.01 and 37 CFR § 1.76. Withdrawal of the objection is requested.

**IV. Objection to the Specification**

On page 2 of the Office Action, the examiner objects to the specification for not reciting drawing reference numeral "34".

As noted above, Applicant has amended the specification at page 5, line 27 to recite the drawing reference numeral 34 as depicted in Figure 4, as suggested by the examiner. Withdrawal of the objection is requested.

**V. Objection to the Drawings**

On pages 2-3, the examiner objects to the drawings for not including the reference numeral for "space 29", as disclosed at page 4, line 30 of the specification.

In reply, Applicant has submitted herewith a replacement drawing sheet for Figure 1 that that includes a reference numeral for "space 29". Withdrawal of the objection is requested.

Please replace the word "installer" with "impeller, in claim 1.

**VI. Objection to the Claims**

On page 3, the examiner objects to claim 1 for containing a minor informality. The examiner notes that at line 5 of claim 1 should be revised to replace "installer" with "impeller." Applicant has amended claim 5 in the suggested manner. Thus, withdrawal of the rejection is requested.

**VII. Anticipation Rejection**

Claims 1-4 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Kamata (Japanese Patent Application Publication No. 53-1301) for the reasons in item 3 on pages 3-4 of the Office Action. This rejection is respectfully traversed.

The rejection should fall because Kamata fails to disclose each and every element of the claimed invention, as required for anticipation. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); See also M.P.E.P., Eighth Ed., Rev. 6 (September 2007) at § 2131.

Kamata discloses a centrifugal pump for pumping liquids, comprising a drive unit and a hydraulic unit, whereby the hydraulic unit comprises a pump housing (6) and a pump impeller (1) rotationally arranged inside the housing, the

pump impeller (1) comprising an upper (4) and a lower (2) cover disc and a number of intermediate vanes (3), the pump housing comprising a bottom wall facing the lower cover disc and having a central inlet opening, wherein a circular gap (a) separates a space (A) arranged between the lower cover disc (2) and the bottom wall of the pump housing from said central inlet opening. Thereto, the bottom wall of the pump housing (6) is arranged with at least one spirally swept, back flow affecting means (10a) on the side facing the lower cover disc (2) extending part of or full turns around the inlet opening.

However, an essential feature of main claim 1 of the present application is lacking, namely, the feature of "the portion of said back flow affecting means (32, 34) being located adjacent the circular gap (30) is arranged below said circular gap (30)." Kamata does not disclose or suggest this feature. Instead, in Kamata, the circular gap (a) is located completely below the back flow effecting means (10a) in the axial direction, which is the very opposite of the claimed device of the instant application. Accordingly, it is clear that Kamata fails to disclose each and every element of independent claim 1. Thus, claim 1 and all claims dependent thereon are believed to be novel over Kamata.

Withdrawal of the 102(b) rejection of claims 1-4 over Kamata is therefore requested.

For the same reasons, it is believed that the claimed centrifugal pump is not obvious over the teachings of Kamata. Nor would it be obvious over any combination of Kumata and Oba et al. (Japanese Patent Application Publication No. 9-4585), which was cited but not relied upon by the examiner.

As discussed above, there is no disclosure or suggestion in Kamata to modify its teachings to arrive at the claimed pump having the above-noted feature wherein "the portion of said back flow affecting means (32, 34) being located adjacent the circular gap (30) is arranged below said circular gap (30)" of claim 1.

Further, it should be noted that Oba et al. lacks several features of claim 1. For instance, Oba et al. discloses an open impeller wheel and not a closed impeller wheel as required in claim 1.

In addition, Kamata is not concerned with the same general problem of reducing wear of the gap separating the impeller from the bottom wall of the pump housing, as in the claimed invention.

It is believed that the technical effect achieved by of the claimed pump is a distinguishing feature in and of itself. The main technical effect attained by claim 1 of the present invention in comparison with Kamata is due to the interrelationship between the back flow effecting means and

the circular gap separating a space between the lower cover disc of the impeller and the bottom wall of the pump housing from the central inlet opening of the pump. The main technical effect is that solid and abrasive particles to a great extent are prevented from reaching said gap.

The objective problem underlying the invention is thus to modify the centrifugal pump according to Kamata in order to achieve this technical effect, i.e. obtain a pump in which solid and abrasive particles to a great extent are prevented from reaching the circular gap. Accordingly, this problem has been solved by way of the pump in claim 1 of the present application, in which the portion of said back flow affecting means being located adjacent the circular gap is arranged below said circular gap, thereby the solid particles, that enters the space between the lower cover disc of the impeller and the bottom wall of the pump housing and that reaches the radially most inner portion of the bottom wall, are prevented from entering the circular gap.

Kamata is completely silent about a centrifugal pump being suitable for pumping liquids containing pollutions mainly in the form of solid particles. The circular gap (a) of the centrifugal pump according to Kamata is arranged completely below the back flow effecting means (10a). Accordingly, in Kamata, all solid and abrasive particles, which enters the space between the lower cover disc of the



impeller and the bottom wall of the pump housing and which reaches the radially most inner portion of the bottom wall, will inevitable enter the circular gap. Moreover, the objective problem is not an issue in Kamata. Accordingly, upon reading Kamata, the skilled artisan would not be provided with any suggestion as to how to arrive at the objective problem achieved by the claimed pump, since wear of circular gap is not a problem in Kamata. In this regard, Kamata does not provide any guidance as to how to modify its teachings in order to solve the objective problem, and even less guidance as to how to arrive at the present invention as claimed.

Oba et al. is not discussed here in detail since it concerns an open impeller wheel and the present invention is directed towards a centrifugal pump comprising a closed impeller wheel. The objective problem cannot be an issue for a centrifugal pump comprising an open impeller, since it lacks a circular gap. Thus, the skilled artisan would not turn to Oba et al. in order to solve the objective problem achieved by the present application.

Thus, it should be apparent that Kamata neither solves the objective problem nor provides any guidance, direct or indirect, of how to solve the objective problem. For these reasons, the present invention is novel and patentable over any combination of Kamata and Oba et al.

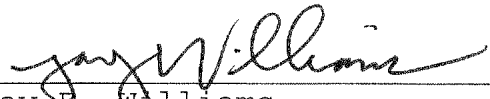
**VIII. Conclusion**

All of the issues raised in the Office Action have been fully addressed in a manner that should lead to patentability of the present application. Favorable consideration and allowance are requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact the undersigned attorney at the telephone number below.

Respectfully submitted,

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**APPENDIX:**

The Appendix includes the following item(s):

- Replacement Sheet for Figure 1 of the drawings;
- Supplemental Application Data Sheet.